



Science News-Letter

The Weekly Summary of Current Science

A Science Service Publication



Edited by Watson Davis
Vol. XI No. 303

10¢ a copy \$5 a year
January 29, 1927

ENGINEERING

Engineers Report Progress Toward Better Autos

On this page are reported some of the important papers presented at the meeting of the Society of Automotive Engineers at Detroit, January 25 to 28.

Chromium

Chromium, once a chemical curiosity, is now being used in the automotive industry on account of its hardness and resistance to corrosion. W. N. Phillips of the General Motors Corporation reported that chromium plated upon steel and other metals is being used for coating gages, tools, dies and files, finishing radiators and surfacing bearing surfaces. Chromium has been found to be harder than the hardest steels used in automobile manufacture.

Gasoline

The burning question as to what fuel gives the most miles per gallon most satisfactorily when used in American automobiles has been studied by the society and the results were announced by Dr. H. C. Dickinson of the U. S. Bureau of Standards and the Massachusetts Institute of Technology.

One of the conclusions startling to the average driver is that the ten miles per gallon obtained is independent of the ease with which the gasoline evaporates. The experts therefore conclude that the heaviest fuel is the most economical.

Other conclusions arrived at after four years of tests on the part of the U. S. Bureau of Standards, the research department of the Society of Automotive Engineers, ten automobile companies and the petroleum industry, are:

"Gasoline consumption is somewhat greater in winter than in summer.

"Dilution of crankcase oil is consistently greater the heavier or less volatile the fuel.

"Dilution of crankcase oil is much greater in cold weather than in warm.

"Small differences in the initial volatility of the fuel have a large effect on engine starting.

"Starting performance of the fuel

is the quality most readily noted by the driver."

Economy dictates the use of as heavy a fuel as possible, Dr. Dickinson explained, but a practical limit in this direction is set by the dilution of crankcase oil and the difficulty in starting.

On account of the limiting factor of the thinning of the crankcase oil, an extensive survey was undertaken to determine the methods of reducing dilution. The following recommendations were made: Operate with high cylinder wall temperature; reduce the time required to reach normal operating temperature; always use as lean mixtures as practicable; operate with high oil temperature; ventilate the crankcase.

Inexpensive Cars

A two-passenger automobile, weight only 750 pounds, 13 horsepower motor, 50 miles per hour, 50 to 54 miles per gallon of gasoline, 76 inch wheel-base and 46-inch tread, and selling price that would put the Ford almost in the Rolls Royce class.

Such is the motor car that has actually been built experimentally but not yet put into production by one of America's large automotive concerns, Fabio Sergardi, now with the Reo Motor Car Co., told the society in analyzing the future of the small car in America. Mr. Sergardi designed this car when with another company over a year ago.

Low price, under \$400, rather than low operating cost and small size must be the attractive feature of a small car in this country, Mr. Sergardi told the engineers. Whereas high taxes, high cost of fuel, cost of upkeep, lack of space in Europe operate to keep all but the wealthiest classes from owning cars, such is not the case in this country, he explained, and the small, high-class car loses its attractiveness on this side of the water. A two-passenger car of small power, short wheel-base, and very low price,

produced in quantity by a large company might have success, he declared.

Four-cylinder cars are doomed to disappear from the American market if one of the larger companies making four-cylinder cars changes over to six cylinders, Mr. Sergardi predicted.

X-Rays

X-rays can play their part in the manufacture of an automobile, George L. Clark of the department of chemical engineering of the Massachusetts Institute of Technology, told the Society of Automotive Engineers here this afternoon. The short, penetrating rays give the scientist clues to the ultimate structure of materials, aid the metallurgist in making new combinations of metals and understanding those already perfected, allow the engineer to detect defects in the fabrication of metals used in the cars, and give information aiding the utilization of rubber, asbestos, fibers, lubricants, paints and other materials.

"Pivoting"

How to prevent automobiles from whirling or pivoting when brakes are suddenly applied was discussed by Johannes Plum of the Royal Danish Legation. The adoption of four-wheel brakes has complicated the problem since distribution of braking pressure between front and rear wheels that is effective on dry roads becomes dangerous when roads are wet and skiddy. One interesting conclusion from Mr. Plum's investigations is that from the standpoint of pivoting front wheel brakes only are not in the least dangerous while brakes both front and rear are dangerous if pressures are not combined in correct proportion.

Automobile "Shimmy"

Why does an automobile shimmy? This is the question that was seriously discussed by Karl L. Hermann of the Studebaker Corporation of America.

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Automotive Engineers

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As drivers often discover, a motor car under certain conditions shakes and dances, mostly with its front end. Mr. Hermann classified the auto antics as: Kick back or wheel fight, that begins at about 25 miles an hour and makes the steering wheel hard to hold. Tramp and gallop that begins at about 45 miles an hour and is a slow vertical or swinging movement. Incipient shimmy that begins at about 45 miles an hour and appears as a side movement of the radiator cap combined with wheel fight. Violent shimmy that comes at 60 miles an hour, causes doors to shake open, and can not be driven through. In violent shimmy, Mr. Hermann explained, "three radiator caps seem to exist where only one should be."

Tires are most to blame for automobile shimmy. While improper alignment and balance of wheels, springs, lubrication, and wavy roads all have some influence on shimmy, the fundamental causes are in the tires. Tires are not often well balanced due to the valve and the overlaps of layers inside the casing. Moreover, use of balloon tires has caused inflation pressures to become as important today as the motor itself, yet causes, such as temperature, leakage, etc., over which the driver has little control can vary the pressure as much as 10 pounds. And low or uneven tire inflation will often cause shimmy.

When various forces so combine with recurring regularity as to tend to lift the car from the road, some sort of shimmy will occur, Mr. Hermann explained. Since complex factors unite to cause shimmy, a cure in one case will not always be effective in another. But Mr. Hermann declared that the problem could be solved by tire and wheel manufacturers experimenting and producing more uniform and better products.

Science News-Letter, January 29, 1927

News-Letter Features

Born over four years ago of the demand and interest of those individuals who had caught a glimpse of *Science Service's* news reports to newspapers, the SCIENCE NEWS-LETTER has since proved interesting to laymen, scientists, students, teachers and children.

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Photographs aid in the telling of the week's science.

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SCIENCE NEWS-LETTER, The Weekly Summary of Current Science. Published by Science Service, Inc., the Institution for the Popularization of Science organized under the auspices of the National Academy of Sciences, the National Research Council and the American Association for the Advancement of Science.

Publication Office, 1918 Harford Ave., Baltimore, Md. Editorial and Executive Office, 21st and B Sts., N. W., Washington, D. C. Address all communications to Washington, D. C.

Entered as second class matter October 1, 1926, at the postoffice at Baltimore, Md., under the act of March 3, 1879. Established in mimeograph form March 13, 1922.

Subscription rate—\$5.00 a year postpaid. 10 cents a copy. Ten or more copies to same address, 6 cents a copy. Special reduced subscription rates are available to members of the American Association for the Advancement of Science.

Advertising rates furnished on application.

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What the White Man Has Done to Indian Art

By MARJORIE MACDILL

The quantity production age in which automobiles are turned out in 100,000 lots daily has put on the hand-made a premium that has been a perfect lifesaver to the tribal arts of the original Americans. The handicrafts of the Indian and Eskimo which civilization has put in grave danger of extinction have come back to life again with a vengeance, as retired Babbit, not to mention his wife and daughter, turns collector. The modern craze for the hand-wrought antique, the bizarre and, less necessarily, the beautiful, augmented by the all-penetrating automobile, has convinced our precursors on this continent that they have something to sell.

The time when an Indian woman expended hours of painstaking effort modeling a beautiful clay jar that sold to a passing trader for twenty-five cents is past. Today she demands \$35 of the transient tourist and gets it; and very often it is worth even more. This ready market for Indian products has produced some surprising results that range from the cheap five-and-ten-cent-store art of the Indians of Southern Alaska to the beautiful pottery made in the Southwest.

In the Hopi pueblos there is an old woman called Nampeo who has staged a most amazing comeback of the ceramic art of her tribe. Ethnological experts on early American races tell us that the pottery of the Hopi reached its apex of excellence during the pre-history of the pueblos. Since this period the designs have degenerated steadily, though it still is the best native pottery made in the United States.

During some of the early investigations in the Southwest undertaken by the Smithsonian Institution under the direction of Dr. J. Walter Fewkes, some exceedingly fine specimens of early Hopi jars were brought to light. Nampeo, then a young girl, was so impressed with the beauty of the handiwork of her remote ancestors that she attempted to copy some of the designs in the jars that Hopi women make for household use. Since she was an artist of a caliber that occurs but rarely in any race, her attempts were successful. Her pottery, copied after samples 2,000 years old, approaches the excellence of her models.

When she had the opportunity to see any of the old specimens of the ancient Hopi jars and bowls she copied their designs down on paper



ONLY THREE VILLAGES are left on the upper reaches of the Rio Grande where black jars are made like the one balanced on the head of this young lady with the untrimmed bob. (Courtesy of Smithsonian Institution.)

for future use. She hunted up the same sort of clay the old potters used and endeavored to emulate their technique, generally with highly satisfactory results. Thanks to Nampeo, Hopi pottery again approaches some of its pristine glory.

Black jars made in the Tewa villages near the upper Rio Grande bring large prices. There are only three villages left of this particular branch of the pueblo Indians and much of their pottery has degenerated to meet the demands of the tourist trade. Craftsmen of the past, however, have produced very fine jars of a beautiful highly polished black.

Skipping to the other end of the

continent we find that among the Eskimo, reindeer raising is quite substantially supplemented by ivory carving as a means of bringing extra pennies into the family igloo. The modern motorboat, that is beginning to replace the skin covered kayak in the more affluent circles of the Alaska Eskimo, is quite probably purchased with the proceeds of laboriously carved beads of fossilized ivory now adorning the neck of some Seattle debutante.

Scientists who have recently returned from expeditions to the Far North report the prevalence of ivory carving as the great indoor sport of the long Arctic night along the northern coast of Alaska. The aboriginal inhabitants of these regions displayed a well developed "feel" for perspective and considerable realism in their straight silhouette etchings of reindeer, seal, sharply pointed pine trees and bulky ice masses on the flattened side of walrus tusks. Early Eskimos once used so-called fossilized ivory showing beautiful mottlings of gray and cream to fashion bits of dog harness equipment, knife handles and amulets. Their descendants have grafted on to this primitive handicraft, however, modern ideas that contacts with white men have taught them. Beavers and reindeer are still carved on walrus tusks but there is a log cabin in the background and the whole tusk is elaborated to make a cribbage board! Napkin rings and paper knives are embellished in the same way, and hand carved beads of the fossilized ivory form necklaces that would certainly make a popular "number" with fair purchasers in any novelty shop to which they happened to find their way. Steel has replaced crude flints for etching instruments and to obtain the outline effect of black and white the native resorts to the simple expedient of rubbing the *objet d'art* from time to time over his greasy clothing filling the scratches in with dirt.

Eskimo art was originally so conventionalized that each region or village had its distinctive form. This was probably due in part to the isolation of the villages during the long dark winter when intercommunication was often impossible. This local individualized touch was so pronounced that when an arrowhead found implanted in the breastbone of a wild goose shot somewhere in the region around the Great Lakes, was sent in to the National Museum for identification, ex-

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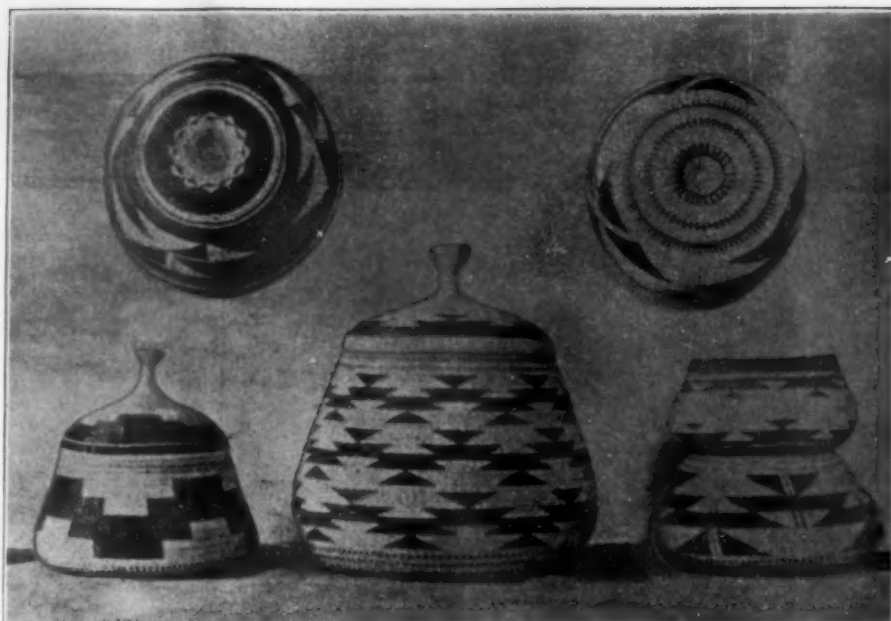
Indian Art

(Continued from page 67)

perts were able to recognize it immediately. They could tell by comparison with a drawerful of specimens in just which Eskimo village it was made, so closely did it resemble the others from the same section.

This individual phase of Eskimo handicrafts is going fast as a result of the demands of the novelty trade. The Eskimo craftsman naturally makes the things for which he is paid money and these articles are pretty much the same; so Eskimo art is rapidly becoming generalized.

Though the art of the Eskimos has been contaminated from the artistic standpoint by modern influence, it still maintains a highly developed craftsmanship. Further south in Alaska Indian art has not fared so well, and had slid down to the ten-cent-store level mentioned above. At Ketchikan, largest city in Alaska and first port of call out of Seattle, Chief Johnson of the Tlingit tribe caters to the tourist traffic with examples of miniature totem poles and wood carving made while you wait. According to an ethnological expert of the U. S. National Museum, who has spent many



CALIFORNIA BASKETS, called by experts the most beautiful of the native American baskets. The art of making them may become lost for only a few families still continue to weave them. (Courtesy of Smithsonian Institution.)

summers in Alaska, Chief Johnson expresses stoic scorn for both the stuff he vends and its purchasers, but as he philosophically remarks, "One must make a living."

Wood and unsmelted copper ore were originally the media most used by the northwest coast Indians for the fantastic conventionalized animal carvings made familiar by totem poles. Copper is specially favored and with the coming of civilization ceremonial masks used in tribal ritual often have had culinary origin in the copper pots and kettle brought in by white men. As enterprising steamship and railway companies keep on boasting "See America First" and the resulting lucrative tourist market continues, the natives have turned to other materials to transmute into dollars. Slate has proved one of the most successful and is used extensively by the Haida Indians of the Queen Charlotte Islands. It is comparatively easily worked and, carved and polished into the grotesque, animalesque totem faces, it looks not unlike the Maori art of the natives of New Zealand.

Living on some of the tiny islands of the Aleutian group to the southwest of Alaska are the Attu Indians whose baskets are said by experts to be the finest made in America. There is a tradition that a native girl educated on the "outside" returned home and found that actual makers of the Attu baskets had dwindled down to a few individuals. Realizing their value she managed to stimulate sufficient interest in the industry to re-establish it on a firm basis. They are made of

exceedingly fine strands which are woven under water like Panama hats. Microscopic specimens in the U. S. National Museum are so minutely woven that they will fit inside a thimble.

The Chitimacha Indians of Southern Louisiana, once the best basket makers of the East, have likewise had their best tribal handicraft rescued from oblivion. Snake and alligator patterns occupy as favored a place in their designs as they do right now in milady's footwear. The Indians have been encouraged to revive the soft hued vegetable dyes and are now turning out beautiful baskets of sporting patterns that a diamond backed rattler would be proud to claim for his spring suit.

Though the art of making California baskets is confined at present to only a few families, Navajo blanket weaving, on the other hand, has continued to flourish lustily ever since the days of the Conquistadores. Every traveler on the Santa Fe who gets off to stretch his legs on the Albuquerque platform can see Indians supplying local color weaving gaudy blankets with designs more or less following the complicated symbolism of his forefathers. Unfortunately the old pastel shaded vegetable colors have been supplanted by the more easily obtained aniline dyes, but even so they still bring good money. The best of the present day products of the Navajo looms, artistically speaking, are the black, white and gray blankets made from natural undyed wools.

Science News-Letter, January 29, 1927

A Forewarning
Benjamin Harrow's

THE ROMANCE of the ATOM

will be published in Mid-February. Of all the fine books published in our day that make intelligible to every man the problems and achievements of science, this book we feel is the culmination. Advance orders for this book are gratifyingly large.

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The Scopes Case Decision

Though the Tennessee Supreme Court has upheld the State anti-evolution law that gave rise to the famous Dayton battle of the summer of 1925, its interpretation thereof, as written into its decision, virtually makes the much-debated statute a dead letter and puts the Supreme Court on the side of evolution, in the opinion of Scopes' supporters.

Henry E. Colton, who took part in the appeal as counsel for the Tennessee Academy of Science, points to the interpretation of Justice Chambliss as a virtual agreement with the position of the lawyers for the defense.

"He holds that the act does not prohibit the teaching of the scientific theory of evolution as usually taught in schools and colleges, but merely the teaching of materialism or the materialistic theory of evolution," Mr. Colton said. "Under Justice Chambliss' decision the teacher is at liberty to teach the gradual development of human and other life in accord with the scientific theory of evolution provided that in so teaching he does not deny man's divine origin."

When shown Mr. Colton's interpretation of the Tennessee Supreme Court decision on the Scopes case, Dr. Vernon Kellogg, permanent secretary of the National Research Council, made the following statement:

"The statement of Mr. Colton concerning the real character and significance of the decision of the Supreme Court of Tennessee in the Scopes case throws upon this decision a different light from that thrown upon it by the first newspaper accounts of the action of the Court. It is a light less unflattering to the intelligence of the supreme judicial body of Tennessee.

"No teacher of evolution that I know wishes to teach evolution in any such way as to make it deny the existence of God, or even to exclude an element of divinity in the origin and character of man. Evolution as a method or process and God as an ultimate cause are two different things. If the Tennessee law does not prohibit the teaching of evolution but only the teaching of a 'materialistic theory of evolution' which denies God's share in the origin of man, then evolutionists have no large cause to complain. Because while we know something of the nature of the evolutionary process in Nature we do not claim to know the ultimate causes and control of evolution. That is the mystery of life."

Opponents of the Tennessee anti-evolution statute look upon the deci-

(Just turn the page)



LELAND OSSIAN HOWARD

Warrior Against Insects

Perhaps more than any other one person during late years Dr. L. O. Howard has helped put economic entomology on the map. He has been the leader in bringing forcefully to the people the menace injurious insects hold for humanity. Busy as he has been with the administration of the rapidly growing U. S. Bureau of Entomology and with his own research in the field of natural control of injurious insects and in medical entomology, he has devoted much time in lectures and in published articles to the increasing danger to the human race through the rapid multiplication of insects.

Dr. Howard was born June 11, 1857, at Rockford, Illinois, while his parents (New Yorkers) were making a temporary stay there. He was educated at Cornell University, graduating in 1877. He took a year's graduate work preparatory to medicine. Just then, however, he received an appointment in the Department of Agriculture in Washington, where he has been engaged in scientific work since November, 1878, first as assistant entomologist and from June, 1894, as chief of the service.

The work was in its infancy when Dr. Howard came to Washington, the annual budget amounting to only \$5,000. But so great has been the appreciation of the work done in this direction that the appropriation bill for the fiscal year beginning July 1, 1927, carries more than \$3,000,000.

Dr. Howard has been president of

(Just turn the page)

Static Hurricane Warnings

Static, the bane of the radio fan who wants to get distant stations, may prove a valuable warning of such storms as the disastrous hurricane which struck Miami last September, according to a study made by the Hydrographic Office of the U. S. Navy.

Beginning in March, 1924, the U. S. S. *Kittery* was used in a study of the value of weather maps in navigation. Before the experiments had been under way very long, it was noticed that there was a very definite relation between the state of the atmosphere, as recorded in the data for weather maps broadcast from the naval radio station at Arlington, and the static. Later, when the weather maps were broadcast and received by means of the machine invented by C. Francis Jenkins, where a duplicate of the transmitted map is automatically drawn on the ship, it was found that the receiver could be used to record static.

The Jenkins machine is used in connection with a radio compass. The latter device is equipped with a loop antenna so that signals may be recorded from one definite direction. As the loop is rotated, and peals of static in any direction are detected by the receiver, corresponding ink lines are drawn on the paper-covered revolving drum of the Jenkins machine. In the time that it takes the recording pen to travel from one end of the drum to the other, the loop is turned through a complete circle, so that the paper gives a graphic picture of the static in any direction from the observer.

The *Kittery* was fortunate enough from the scientific viewpoint, to be in the path of the Miami hurricane of September, which was preceded by another hurricane that swept over Bermuda. On Sept. 14, when the *Kittery* was east of Nassau, the Bermuda hurricane was a few hundred miles to the northeast and the Miami hurricane was approaching St. Thomas. The maximum of static was from a direction between these two storms. As the ship sailed south, and the Miami storm came nearer, while the Bermuda one went out of range, the static in the direction of the former became more intense. Finally, on Sept. 16, after the *Kittery* had reached Cape Haitien, at the northwest tip of Haiti, and had made necessary preparations for rough weather, the ship and storm met. The static was terrific in all directions.

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Static Hurricane Warnings

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By Sept. 18, the *Kittery* was at Guantanamo, Cuba, and the storm was 600 miles away.

The *Kittery* met the Miami hurricane on its way to Florida, and rode through it, when the static was terrific in all directions. When the storm was 600 miles away, there was a well marked maximum of static in its direction. As such hurricanes develop in the doldrums of the Atlantic Ocean, off Cape Verde, the western tip of Africa, several weeks before they hit the United States, it is suggested that a group of radio compass stations located, perhaps, at San Juan, P. R., a point in the Barbadoes, and Trinidad, would be able to detect these storms as they approach. With three stations, where the lines from each cross would be the center of the storm, so that its position could be accurately plotted and sufficient time for warnings and preparation could be allowed.

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Burial of the dead, which is a rite practiced only by human beings, was started by very early primitive men.

Cutworms, which pester the modern farmer, were a problem for Indian planters when colonists came to this country.

Alaska has enough grazing land available to support 3,000,000 reindeer, even though each reindeer requires 40 to 60 acres.

In prehistoric times, Java, Sumatra, and Borneo were a part of the Asiatic continent, says a botanist of the University of California.

In recent years coyotes have spread, so that they are now found from Central America to Canada, and from Indiana to the Pacific coast.

Painting the ends of street cars white, to make them more clearly visible to automobile drivers at night, is being tried in San Francisco.

Air mail planes that fly at night are equipped for emergency use with two parachute flares each giving a 30,000-candlepower light for four minutes.

A criminologist says that juvenile sex delinquency is a crime of dull or moron minds, whereas stealing is a crime of persons normal or superior as far as mentality goes.

Warrior Against Insects

(Continued from page 69)

the American Association for the Advancement of Science, is a member of the National Academy of Sciences and the American Philosophical Society, and a fellow of the American Academy of Arts and Sciences. He has been president of two international congresses and vice-president of others. He is a member of more than twenty foreign scientific academies and societies, and has received several decorations and medals. He has also been given the degrees of Ph.D., M.D., Sc.D. and LL.D.

Science News-Letter, January 29, 1927

ENTOMOLOGY

Entomonimrod

On reading of Dr. L. O. Howard's account of man's warfare with the insects

I write of roaches, flies and bugs,
Of ants and gnats, of weevils, slugs,
Of creeping, crawling, troubling things,

The flea that bites, the wasp that stings.

They eat our corn and oats and wheat
Consume our bread, our drink, our meat,

Infest our homes, decrease our wealth,
Disturb our sleep destroy our health.
Their progeny by millions swarms
About our quiet country farms.
The question often comes to me
When fighting bed bug, ant or flea,
Or chasing up maulauding flies
Protected mainly by their size,
Of life which has the longer span,
Which will survive, the bugs, or man?

—Charlotte K. Miles.

Science News-Letter, January 29, 1927

The robber fly is fierce and cruel in its attacks on bees, wasps, and other "game" that it hunts for food.

A new type of torch, burning gas combined with oxygen, may replace acetylene and other gas torches now in use.

School children in Egypt are to be grouped according to intelligence, as they are in many schools in this country.

The Island of Melos is an ancient volcano, and the famous Venus of Milo may have lost its arms in an earthquake.

The Chichimec Indians of the Valley of Mexico were so healthy in ancient times that when one of them was sick for more than four or five days he was killed.

The Scopes Case Decision

(Continued from page 69)

sion of the State Supreme Court as an effort to shove it into the limbo of laws laid on the shelf and left unenforced—the fate hinted for it by Governor Peay when he signed it nearly two years ago. Supporters of the defense in the Scopes trial are disinclined to rest content with the partial victory that can be read into the three opinions given by members of the Supreme Court, and are looking over the ground to decide on a further plan of campaign to force a clear-cut meeting of the issue.

"The Scopes decision is amazing," was the characterization by Arthur Garfield Hays, chief authority on constitutional law among the legal talent on the Scopes defense. "The most disappointing part of it is the reversal on a technical point not raised by us. This was apparently done to avoid an appeal to the United States Supreme Court.

"It is to be noted that the prevailing opinion in the Tennessee Supreme Court held the act not unconstitutional on the ground of indefiniteness; yet three opinions give three different constructions.

"Tennessee seems to be making an extreme effort to avoid the consequences of this law. If no appeal to the Federal Supreme Court is possible we shall have to take some other course to test the law, for the State will probably never attempt to enforce it again. It is too bizarre."

Science News-Letter, January 29, 1927

Asbestos is used in making fire-proof paint.

The average number of eggs laid by a hen in this country is 55 a year.

Whether bees are color blind is being investigated by government scientists.

Experiments to cut down the number of pieces in a house are expected to make construction cheaper.

The United States will have a population of 123,288,000 by 1930, the Bureau of the Census estimates.

To obtain salt in inland China, wells are sometimes laboriously bored through solid rock to a depth of 3,000 feet.

A folding go-cart for a baby that can be made into a 14-pound handbag when baby is not riding is a new device.

OCEANOGRAPHY

More Study of Sea

Science has made a good deal of headway in the conquest of the theoretical and practical problems presented by the land and its life, but though man has for centuries gone down to the sea in ships, as yet he knows but little about it. And the time has come when it is highly important that we learn something of the sea, according to Prof. W. E. Allen, of the Scripps Institution for Oceanography at La Jolla, Calif.

Knowledge to be gained by a study of the life of the sea will have a four-fold importance, Prof. Allen declared. Our information about marine biology, at present rudimentary, will benefit directly, and our sciences based on land life will be aided indirectly through having their data supplemented, confirmed or corrected. Inasmuch as the major changes in the earth's crust are immensely influenced by the deposition of marine sediments, sea-life studies may be expected to add to our understanding of geology. Finally economic problems in a thousand fields, from the fish market to the jeweler's shop, involving billions of dollars, await solutions that will become possible only when certain fundamental questions shall have been answered.

Science News-Letter, January 29, 1927

EDUCATION

Length of Teachers' Training

The public, taxed to support the public schools, is naturally anxious to have teachers of high quality. That lengthened professional training is necessary to produce teachers of this calibre is claimed by Dr. L. A. Pechstein, dean of the college of education of the University of Cincinnati. The two-year normal schools need to extend their program of training, he says. The graduate of a two-year normal school, or the teacher with even less training, is not prepared to give the grade of teaching desired by the public. She is apt to be too young, to come from a family weak in cultural influences and to be entering upon her profession solely because of the need to earn money. On the other hand, the extended college and university course produces teachers of greater maturity, drawn from families of higher social and economic groups, who enter upon their careers with a more intellectual outlook.

Science News-Letter, January 29, 1927

MEDICINE

Science Curbs Rabies

Sporadic epidemics of rabies still flare up from time to time in different parts of the country in spite of the advances science has made to protect both men and beast from this justly dreaded disease.

All people who have been bitten by a dog suspected of rabies should, under the advice of their physician, undergo the preventive treatment first developed about 40 years ago by the great French scientist, Louis Pasteur. A wire sent by the neighborhood pharmacist to one of the big drug firms will bring the preventive serum which is injected under the skin of the exposed individual. Several injections are necessary, the number depending on the particular type of serum used. The virus introduced by the bite of the rabid animal travels along the spinal cord slowly and produces the characteristic symptoms only after it reaches and accumulates in the central nervous system. The purpose of the successive injections of the serum is to render the central nervous system immune before the virus can reach this vital tissue.

According to Dr. J. S. Buckley of the Bureau of Animal Industry of the U. S. Department of Agriculture, governmental experiments are in progress, to determine the efficacy of the inoculation of dogs as a means of preventing epidemics among the canine population. Dog inoculation has been practiced in New England and some of the eastern states with varying success and has been done extensively in Japan where only one death in over 30,000 inoculated dogs was reported. Variation in results is due, experts believe, to differences in virulence or "strength" of the filtrable virus that causes the disease.

Rabies has been known since the earliest times and the pages of the history of medicine are crowded with accounts of extraordinary remedies used by people from ancient down to modern times to ward off the horrors of its final stages. As far back as the Roman era, however, cautery was recommended to remove the poison of the infective bite and cautery with nitric acid is even now a standard practice as an immediate prophylactic measure.

Before the days of Pasteur, death almost inevitably resulted from rabies but reports from the health department of New York show that in a period of eleven years over five thousand cases treated by this method showed a mortality under one percent.

Science News-Letter, January 29, 1927

ASTRONOMY

Amateur Finds Comet

The first comet of 1927 was found by an amateur astronomer in South Africa named Blathwayt, on Thursday, January 13.

When located, the new visitor was in the constellation of Scorpio, which can be seen low in the southeastern sky just before sunrise at this time of year. Astronomically, its position at the time of discovery was 15 hours 44 minutes right ascension, and 29 degrees 46 minutes south declination. It was moving to the southeast, making it still lower in the sky for American observers, so probably no observers in northern countries will be able to see it at all. At Braamfontein, near Johannesburg, where the discoverer is located, however, it is almost directly overhead at sunrise, though it is of the ninth magnitude, and too faint to be seen except with a telescope.

Science News-Letter, January 29, 1927

MEDICINE

New TB Treatment Tried

Experiments in the Calmette method of tuberculosis immunization are now under way in the laboratories of the New York City Health Department. Reports from Paris give promise of better results than any other method so far tried, according to Dr. William H. Park, director of the Bureau of Laboratories.

This method has been developed by Calmette of the Pasteur Institute. It consists of the inoculation of infants with tuberculosis bacilli taken from cattle twenty years ago. These bacilli have been kept alive for the twenty years, but in an overheated, semi-starved condition, so that they have lost their potency as disease breeders. An animal inoculated with them will not develop tuberculosis. These germs, however, still produce sufficient of the peculiar poison of the bacillus to force the animal inoculated to build up a resistance to tuberculosis without being endangered by the disease, as would be the case if virulent bacilli were used for the inoculation.

In France, Calmette is using this method to immunize infants born of tuberculous mothers. It has been used for babies to a slight extent in Canada. The bacilli are fed to the infants during the first days of their life. Up to the present, Dr. Park states, the New York City Health Department has experimented only on monkeys and calves.

See Science News-Letter, X, 295, Dec. 4, 1926: "Monkey Vaccine Cures Babies."

Science News-Letter, January 29, 1927

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HYGIENE

Vaccinate Dogs for Rabies

Dog vaccination for rabies may become compulsory when a standardized vaccine has been achieved. Experiments to determine the efficacy and permanency of canine vaccinations are about to be undertaken in federal, state and New York City laboratories, according to a statement issued by the New York City department of health.

Over 100,000 dogs have been vaccinated in Tokio and Yokohama between 1919 and 1924, according to Dr. Hideyo Noguchi of the Rockefeller Institute for Medical research. Of these only 41 have subsequently developed rabies. Among one-third as many unvaccinated dogs in the same cities, there were 16,991 cases of rabies during the same period, the Japanese bacteriologist stated.

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The United States leads in production of salt.

Elephants work at ploughing in the Belgian Congo.

Hogs are now tattooed as a means of identifying them.

Adept Aztec surgeons sewed up wounds by means of hair.

The oyster crop has dwindled considerably in the past ten years.

Prehistoric cave men of Europe hunted over 20 different animals.

Sequoia was the only Indian to invent an alphabet of his language.

Safety rules governing the design of electric toys are being established.

The Chinese obtain vegetable tallow from capsules growing on the tallow tree.

Anacondas are not poisonous reptiles, but their teeth are powerful weapons.

The thread spun into a cocoon by a silkworm is sometimes over half a mile long.

An old sailing ship is being made into a marine museum and aquarium in San Diego.

Government scientists say that snow rarely falls at one time to a depth of more than nine inches.

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AGRICULTURE

Corn Borer Control Hoped

The European corn borer, were it human, would undoubtedly be suffering from a case of the big-head. Probably never before has an insect been mentioned in a presidential address as was the corn borer, when President Coolidge called attention to its menace in his recent address to Congress, saying that it "warranted the federal government in extending cooperation" to fight its spread. And now the House has voted a special appropriation of \$10,000,000 to be used in a campaign to control the spread of the borer. This is quite aside from the \$685,000 asked in the regular agricultural bill for research and quarantine of the pest by the Bureau of Entomology.

Contrary to a widespread impression, this \$10,000,000 appropriation is not for the eradication of the borer. Government entomologists have no hope of such a thing as eradication. To eradicate the borer from the country it would be necessary to make of the infested area a desert, for the European corn borer attacks 225 different kinds of plants. Thus eradication is out of the question. The \$10,000,000 appropriation is for an experimental clean-up campaign to reduce the chances of the corn borer's spreading throughout the corn belt by reducing the number of borers present in the infested areas. Last year was the first year that the corn borer did any real commercial damage in the United States, but the example of Canada, where the main corn belt is heavily infested and where 12,000 square miles suffered a complete loss of the crop last year, shows what the corn borer may do here in time unless steps are taken.

To be used this spring the money named in the special appropriation must be available by February 1. This means that not only must the Senate pass the bill and the President sign it, but the infested states must pass necessary regulatory legislation giving state and federal officials the authority to take action where the farmers refuse to adopt the prescribed method of treating the crop.

The plan is that the government shall bear the expense of any farm clean-up measures addition to ones followed by the farmer under normal circumstances. In other words, the government would pay for the extra labor and expense involved in the special operations necessary in infested areas.

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PSYCHOLOGY

Destroying Memory in Rats

Rooting out memories in rats is the feat that has been accomplished by Dr. K. S. Lashley of the Institute for Juvenile Research, Chicago. Many of our universities in recent years have added departments of rodent education, majoring the course in that branch of activity in which rats have shown themselves proficient in all ages, that is, finding their way through tortuous passages. The rat to be trained is put into one corner of an artificial maze and set to find his way to his food in some other compartment. When he is able to run rapidly through the passages without hesitation and without tiring into a blind alley, he is credited with having learned his lesson. Dr. Lashley has discovered that this acquired proficiency can be eradicated by cutting out certain parts of the brain, particularly in the parietal region. The larger the area injured the greater is the number of trials required for relearning the lost lesson. When the cerebral lesion is extensive more practice is necessary for relearning the maze than for learning it at first but other and simpler habits are formed as quickly as ever. The investigator concludes that the maze habit is relatively independent of the activity of specific neurons but somehow depends upon the massed activity of the greater part of the brain. Obviously such studies of the localization of various forms of action in rats may throw light upon the cause and cure of mental diseases in man.

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BOTANY

Plant Missing Links

Fossil remains of plants with leaves like ferns but with fruiting bodies that tie them up with seed plants, have been found in "coal balls" from a coal mine at Danville, Illinois, by Dr. J. Hobart Hoskins of the University of Chicago. A report of Dr. Hoskins' work will be published in an early issue of the Botanical Gazette. The fossils were embedded in hard masses of iron pyrite, which had to be ground down thin enough to transmit light before they could be examined with a microscope. These coal balls have long been familiar objects of study in Europe, but interest in them has been aroused in this country only in the last few years, when Dr. Hoskins' teacher, Prof. A. C. Noe, began to collect and make sections of them.

Science News-Letter, January 29, 1927

BACTERIOLOGY

Disease Germs Variable

New conceptions of how immunity is developed against germ-caused infections, that may have far reaching effects on the protection of the human race against disease, are advanced by Dr. Philip Hadley of the University of Michigan.

According to the older views it was thought that all the bacteria of a particular specific kind must necessarily be alike in all their characteristics. Recent work, however, has shown, says Dr. Hadley, that "in one and the same bacterial culture organisms of vastly different potentialities for disease production may exist side by side."

At present, many disease-producing species may be divided into two distinct types; one that is virulent that possesses certain individual properties and is called the S type, and another that is non-virulent, or at least less virulent, that possesses other characteristics, and is known as the R type. The most important difference between the two types lies in the fact that the S form resists the onslaughts of the defensive cells of the blood known as the phagocytes while the other form is readily destroyed by them.

Change from one form to the other may be produced artificially in test tubes in the laboratory. The most potent factor in inciting such changes has been found to be blood or serum from an animal which has been inoculated with the culture of the organism in question. In the presence of such serum the virulent form "S" passes over into the non-virulent form "R." The importance of being able to bring about such an action in the bodies of animals and human beings suffering from bacterial infection is at once apparent.

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ZOOLOGY

Sunlight Bad for Fish

The ultra-violet radiation in sunshine may be a great help to birds and beasts and man, but fish fail to appreciate these invisible rays.

Experiments undertaken at a Vermont hatchery and just reported to the U. S. Bureau of Fisheries, definitely establish that sunlight is harmful rather than helpful to fish. Almost twice as many young fish died in troughs of water exposed to direct sunlight as those in troughs left in the shade, experts found. The experiments were repeated with different ages and different species with sometimes an even greater mortality in the unshaded troughs, it is stated.

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CHEMISTRY IN MODERN LIFE

By Svante Arrhenius, translated and revised by
C. S. Leonard. Library of Modern Sciences.
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DWELLERS OF THE SEA AND SHORE

By William Crowder.
Young People's Shelf of Science. Edited by E. E. Slosson.
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\$2.25.

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CHEMISTRY

Plants Need No Vitamins

For about fourteen years it has been known that animals require in their diet organic substances of unknown composition, termed vitamins, before health can be kept up or growth obtained. These vitamins occur in plants, such as spinach, cabbage and tomatoes. Dr. Norman Clark of Iowa State College, has investigated the possibility that green plants, in their turn, require similar organic substances in order that they may thrive. He states that organic matter is not needed.

Small green duckweeds, familiar objects on the surface of ponds throughout the country, were grown by the use of carefully purified chemicals. It was found, when conditions were made favorable, that the plants were perfectly healthy, and reproduced without the addition of any substance of unknown composition. Dr. Clark states that these results indicate there is no vitamin-like substance essential for the growth of all green plants. There is still the possibility that organic matter may stimulate or increase the growth in plants, but it is not an essential in the same way as vitamins are essentials in the food of animals.

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PSYCHOLOGY

Test Family Likenesses

How much alike mentally are the members of a family? To answer this question, 100 families near Stanford University, California, have been given mental tests, and the points of likeness and difference between members of the families reduced to statistical tables.

Results of the investigation reported by Dr. Raymond R. Willoughby of Clark University show that in general, the closest family resemblance in mentality was found between sister and sister. The lowest degree of similarity was between father and daughter, possibly, he explained, because of a "minimum common environment" for these two members of a household.

The degree of likeness between brother and brother was found to be about the same as that between husband and wife in Dr. Willoughby's tests, which raises the question of the comparative power of heredity and environment to shape personalities, and also the question of the extent to which similar types of mind may attract one another.

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GEOLOGY

Earth Systole and Diastole

The startling suggestion that the earth cannot be relied upon to stay the same size but that it swells and shrinks at irregular intervals is made by Dr. Walter D. Lambert of the United States Coast and Geodetic Survey. Such a variation in the size of the earth would alter its rate of rotation and so upset our universal time-piece for the length of day is our measure of the lapse of time. Prof. E. W. Brown has pointed out that such a variation in our unit of time might account for the apparent irregularities in the motion of the moon that have made it impossible to predict exactly where our inconsistent satellite will turn up at an eclipse. Dr. Lambert thinks it may also account for inexplicable variations in latitude, or what is the same thing, the apparent wandering of the pole. For some years prior to 1918 the north pole appears to have moved progressively toward North America and then to have turned aside without apparent reason and moved toward Europe. Comparatively slight expansion and contractions of various parts of the earth's surface might account for such disconcerting discrepancies in our standards of time and space.

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PSYCHOLOGY

Player Rolls Yield Secrets

How study of player piano rolls will give the secret of the marvellous effects produced by the great pianists has been studied by Dr. Guy M. Whipple, director of the National Intelligence Tests.

Comparison of rolls of the great players with the original score will indicate just where and how they deviated from the score to obtain their effects. Such analysis holds great possibilities for piano students and teachers, Dr. Whipple believes. He points out that although the player piano is so perfected that the artists themselves admit the accuracy of the reproductions the piano roll does nothing but control the time relations or the intensity of the piano hammers or the pedals. Hence interpretation is all a matter of time or intensity.

"You strike a key at a certain time with a certain force," he says, "hold your finger there a certain length of time, push the pedals down at a certain time and let them up at a certain time; that's all the mystery there is about the piano playing of the great masters of the key-board."

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BIOLOGY

NATURE RAMBLINGS

By FRANK THONE

Groundhog

Will the groundhog see his shadow next Wednesday?

It is probable that 99 per cent. of all persons in this country able to speak English have asked each other that question on the second day of every February since the founding of Jamestown. The notion that a sunny Candlemas day betokens six stormy weeks still to come is one of those quaint folk-superstitions, probably pre-Christian in its origin, that dies hard simply because hardly anybody takes it seriously any more. Then, too, it has the advantage of making people wait six weeks to see whether the prophecy is fulfilled or not; and in these busy days nobody is going to stop in the middle of March to figure up the weather and see whether the furry little beast was right or not.

Little blame should attach to the groundhog anyway if he doesn't hit it right. It wasn't his job originally, it was the European hedgehog's—quite a different animal, more like a porcupine. But when the early comers found no hedgehogs in this country they passed on the burden of foretelling the advent of spring to the woodchuck, or marmot, or groundhog. For this interesting little rodent has three aliases, and they are all good and legitimate English names.

To be sure, he doesn't chuck wood, in spite of the old unanswerable riddle. He is a chuck who lives in the wood, and a closely related variety is a chuck who lives among the rocks and is therefore called a rockchuck. The ground part of his groundhog name is all right, for he does burrow extensively; but he is not a hog. There is nothing porcine about him. He is much more closely related to rabbits and squirrels and to those two other misnamed rodents, the guinea pig and the porcupine.

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All insects start out in life as eggs.

The old Egyptians used music in treating disease.

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MAN AND BEAST—Samuel Scoville, Jr.—*Harcourt, Brace* (\$2). An interesting story of the trials of the wild beasts of the South African Jungle and of America, and of their constant warfare with their most relentless enemy—man. The book is illustrated by Charles Livingston Bull.

Science News-Letter, January 29, 1927

PRINCIPLES OF PLANT GROWTH—Wilfred W. Robbins—*Wiley* (\$2.25). The author discusses in non-technical language some of the fundamental principles of plant growth. It is a well-illustrated book not only useful as an elementary botany text but might well be in the hands of every man in any way concerned with agriculture.

Science News-Letter, January 29, 1927

COLLOID CHEMISTRY—Collected and edited by Jerome Alexander—*Chemical Catalog Co., Inc.* (\$14.50). A 947-page symposium on the chemistry of colloids made up of chapters by international authorities including five Nobel prize winners in science.

Science News-Letter, January 29, 1927

PURPOSIVE EVOLUTION, The Link Between Science and Religion—Edmund Noble—*Holt*.

A new essay in the much-plowed but evermore-enticing field of teleology, with the urge behind it to set right the obviously out-of-joint state of thought of the world on the two important subjects of scientific knowledge and religious belief.

Science News-Letter, January 29, 1927

THERMODYNAMICS—C. N. Hinshelwood—*Dutton* (\$1.80). An introductory treatise, designed especially for students of chemistry and physics. The reader's knowledge of calculus is assumed.

Science News-Letter, January 29, 1927

THE EVOLUTION AND DEVELOPMENT OF THE QUANTUM THEORY—N. M. Bligh—*Longmans, Green* (\$3). A brief, but mathematical, exposition of this important physical theory.

Science News-Letter, January 29, 1927

GEOGRAPHY

A Science of Settlement

"The Covered Wagon," one of the most popular moving pictures ever produced, told the story of the pioneers of our western lands. They settled territory which has proved to be invaluable.

A plea for study of such "pioneer belts" as these lands once were is made by Dr. Isaiah Bowman, director of the American Geographical Society. He would create a new science, the science of settlement, to ease the way for the governments of over-populated countries and to develop lands potentially valuable for habitation and for the production of necessities. The idea is not to produce "a handbook for the pioneer by means of which he can locate a productive farm or increase his crop, but rather a guide for the makers of government policies, just as a city survey is a guide for city planning."

The "pioneer belts" of the world today include only a little land in the United States, more in Mexico and Canada, considerable territory in Asia, Australia, South Africa, and South America. In some places land is totally undeveloped and in others greatly underdeveloped.

The widest research is needed, Dr. Bowman said, to answer the question: What is holding men back from entering these areas? Does physical geography establish limits of a critical sort or do the social conditions of a frontier society repel the settler? How can the psychological inhibitions of the settler be dispelled? How can funds available be best expended in this project of settlement?

Science News-Letter, January 29, 1927

BOTANY

Persimmons Mellow on CO₂

The carbon dioxide given off by their own breathing will take the "pucker" out of Japanese persimmons, California scientists have found. Dr. Earle Long Overholser of the University of California, College of Agriculture states that persimmons kept in sealed containers from ten to fourteen days were completely free from astringency. The carbon dioxide given off by the respiratory processes of the fruit while sealed up is believed by scientists to produce this desirable effect.

The whole process can be speeded up by artificially subjecting the persimmons to the gas in larger quantities.

Science News-Letter, January 29, 1927

PSYCHOLOGY

Einstein in Everyday Life

Is Einstein's theory plain common sense instead of the nonsense it has been called? One of the most startling of the conceptions of this theory of relativity is that space and time are not a fixed and universal framework as has been always supposed, but that both time and space are warped or wrinkled in the neighborhood of any piece of matter. This has generally been regarded as an inconceivable mathematical paradox but Prof. C. O. Weber of Wells College finds that it is our natural way of looking at the world. To the muscles distance in all direction is not the same in the vicinity of a mass of matter, for in going uphill 300 feet seems different than in going downhill. By several thousand experiments on fourteen persons, who were set to estimating ten-inch distances with a free arm movement and then moving various weights up to a half pound, he found that all subjects tend to shorten their muscular measurement of space when carrying loads. The greater the load the greater the error in reproducing the distance of the movement. The estimation of time by muscular movement is likewise made inaccurate by loads on the hand. When a person tries to draw straight lines with an iron stylus in a magnetic field which offers resistance to the movements in his hand, he draws curves instead. All these psychological effects correspond with Einstein's idea that space and time are distorted in any such field of force.

Science News-Letter, January 29, 1927

AGRICULTURE

Bones for Fertilizers

An historic note of almost a century ago, that throws an interesting sidelight on the faked wartime report on the use of dead soldiers in German fertilizer factories, has been unearthed by Prof. Paul B. Sears of the University of Nebraska.

In looking over the Second Annual Report of the Geological Survey of Ohio, dated 1838, he encountered the following statement by Prof. W. W. Mather:

"Europe and Africa send wheat to our eastern markets, and at the same time send out orders for our refuse bones, bone earth and sugar refiners, comb factories, etc. Many of the bones of the battle-ground of Waterloo, and from the bone caves of Germany and Italy, have been transported to England and France to supply a material which has become deficient in their soils."

Science News-Letter, January 29, 1927

SCIENCE FOR THE MILLIONS

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SCIENCE SERVICE

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Anniversaries of Science

February 6, 1804.—Death of Joseph Priestley, the discoverer of oxygen.

I had so little suspicion of the air from the *mercurius calcinatus*, etc., being wholesome, that I had not even thought of applying to it the test of nitrous air; but thinking (as my reader must imagine I frequently must have done) on the candle burning in it after long agitation in water, it occurred to me at last to make the experiments; and, putting one measure of nitrous air to two measures of this air, I found not only that it was diminished, but that it was diminished quite as much as common air, and that the redness of the mixture was likewise equal to a similar mixture of nitrous and common air. . . . The next day I was more surprised than ever I had been before with finding that, after the above-mentioned mixture of nitrous air and the air from *mercurius calcinatus* had stood all night . . . a candle burned in it, even better than in common air.

—Priestley: *Experiments and Observations on Different Kinds of Air*.

February 6, 1922.—The President of the Royal Geographical Society announced that the expedition to climb Mount Everest was under way.

Sir Martin Conway, M.P., the famous mountaineer and leader of the first expedition to the Himalayas, expressed the opinion in a lecture at the Hotel des Alpes, Mürren, that the present attempt to ascend Mount Everest was not likely to succeed. . . . "In the first place," he said, "We are in complete ignorance as to the nature of the mountain. It is only known by distant views of the upper part. Nobody before the present expedition has been within forty miles of the mountain, and only one person has been as near as that. The Himalayas are much younger than the Alps and the Welch hills and differ from the former in being much more precipitous and much less rounded-off by the action of the forces of denudation inasmuch as they are in an earlier stage of disintegration. The result is that it is the exception to find a peak that is at all climbable."

Sir Martin's own experience of the Himalayas prompted him to the belief that it would be useless to base hopes on the fact that all the Alpine peaks had been conquered. The assumption that all the peaks of the world are vulnerable was far too sanguine.

—*Manchester Guardian Weekly*, September 2, 1921.

February 7, 1922.—Mme. Curie was elected a free associate member of the French Academy, the first time a woman was so honored.

At the close of the year 1906, Madame Curie was appointed a professor in the scientific department of the University of Paris. She continued her splendid work in a tiny laboratory—far too small—established in Rue Cuvier. Later, upon the University acquiring the land between Saint-Jacques and Ulm Streets, a new street named for Pierre Curie was laid out through the length of this property, and a laboratory specially designed for the use

of Madame Curie was started in coordination with the Pasteur Institute. The present arrangement is this: on one side is the special laboratory for Madame Curie's research work. On the other side is a wing belonging to the Pasteur Institute where researches are carried on in the application of radium and its emanation in the treatment of diseases, particularly those of a cancerous nature. Between these two buildings is a small structure containing the precious substance. . . .

At the present Madame Curie is devoting herself entirely to her work; to her scientific researches, to teaching, and to the organization of a radio-therapeutic service that she is conducting in collaboration with Dr. Regault of the Pasteur Institute.

—Paul Appell, President of the Academy of Paris: *A Sketch of Madame Curie*, written for *Science Service*, 1922.

February 8, 1672.—Isaac Newton reported to the Royal Society his discovery that "Light is composed of a heterogeneous mixture of differently refrangible rays."

I must not neglect to mention also Newton's contributions to optics, which, while not of the fundamental importance of those we have just been discussing, were nevertheless worthy of their author. We need only to recall that he investigated the composition of white light, the colors of thin films, diffraction, and the possibilities of achromatism in refracting telescopes. He was not infallible; for he decided that it was impossible to make an achromatic refractor, and he supported the corpuscular theory of light against the undulatory theory of Huygens. In both cases, however, the evidence obtainable in his time strongly supported his position; and I think it was this, rather than the mere authority of his name, which caused the corpuscular theory to prevail during the following century.

—Henry Andrews Bumstead: *Physics in The Development of the Sciences*.

Science News-Letter, January 29, 1927

ENTOMOLOGY

Airplane War on Gypsy Moth

Death from the air is facing the gypsy moth. Experimental blows have already been struck and promise success in the chemical warfare against this pest of our forest foliage. Arsenate of lead, dusted from aeroplanes, gave considerable control in test areas in New England, according to reports from D. F. Barnes and C. F. Potts of the Melrose Highlands laboratory of the United States Bureau of Entomology. The difficulty in such treatment is to get an even distribution of effective quantities over the infested areas. Hence dusting should be done on days when the wind is low and at a time when the air has a strongly rising relative humidity. The experiments were particularly successful in the case of plots dusted when the gypsy moth larvae were small.

Science News-Letter, January 29, 1927

CHEMISTRY—MEDICINE

How Drugs Poison Bacteria

The synthetic drugs of modern chemotherapeutics act as "shock troops," and the antitoxins which they induce the body to form are the "mopping-up squads" in the battle against invading bacteria.

This, broadly stated, is the kernel of the theory of the action of such products of the dyestuffs laboratory as salvarsan and Bayer 205 advanced by Dr. Wilhelm Roehl, expert of the Elberfelder Farbwerke.

"The first action of chemotherapeutic substances," he said, "is directly upon the germs themselves, poisoning them. The autonomic production of antitoxins by the body, which the drugs induce, is of secondary importance but valuable for the final destruction of the bacteria previously damaged by the chemotherapeutics."

The theory of the chemical action of synthetic drugs containing arsenic advanced by Dr. Paul Ehrlich, the inventor of salvarsan, best known of such arsenicals, is that, though such drugs are of extremely complex chemical structure, their final action on disease germs, is similar to that of the common arsenic used in rough-on-rats or in the too-popular present-day murder mysteries. The famous German scientist holds that the complicated organic arsenic compounds act by the reduction of the arsenic acid group they contain to arsenic oxid. He also holds that organic drugs containing antimony, vanadium, bismuth, mercury, silver, gold and platinum act in a similar manner.

Science News-Letter, January 29, 1927

SEISMOLOGY

East Has Earthquake Danger

People in the region of Philadelphia who think that their homes are free from all earthquake danger because no destructive quake has occurred there during the relatively brief period covered by American history need not feel so safe. For "the old ideas about regions of the earth's surface as being 'free of earthquakes' may be regarded as either erroneous, or at least of a purely relative character," Dr. Frederick Ehrenfeld, professor of geology at the University of Pennsylvania states. The geologic structure of the earth under the Philadelphia region, and especially the fact that it is located within an area less than two hundred miles wide from the seashore to the Blue Ridge and Allegheny Mountains, shows that there may be a strain in the region, and that earthquakes are easily possible.

Science News-Letter, January 29, 1927

The Problem of Translation—

☛Science, probing the unknown universe, writes its findings in cryptic language. A stellar galaxy shining faintly in the heavens hides its splendor and its immensity in numbers and formulæ; a minute germ has thrust upon it a long Latin name. With the aid of such scientific shorthand and such technicalities, science pushes on to new discoveries and new heights.

☛Yet the facts and the methods of science must penetrate and permeate the whole fabric of civilization if the world is to become an increasingly better place to live in. The man in the street, the child in the school, the merchant in the counting house, the judge on the bench, the priest in the temple, all of those who make the world, must know, appreciate, understand and cherish the spirit of research and the power of thought.

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